SPECIFICATION:

Please replace the following enumerated paragraphs of the specification:

[0035] The linear incendiary strand of the present invention incorporates rapid axial ignition means for initiating combustion of a fuel ~~component~~ composition which is distributed along the strand, in the form of one or more bodies of kindling material, wherein an ignition reaction is conducted rapidly along the longitudinal axis of the strand. Such ignition reaction is characterized as a flame-producing, non-explosive deflagration, and does not exhibit the brisance or linear rate of burning that is characterized as a detonation. The rapid axial ignition means is exemplified by an elongate pyrotechnic element that, upon ignition, burns in a rapid manner producing hot gasses and incandescent particles capable of igniting the co-linearly arranged ~~combustible fuel component~~ kindling bodies of the incendiary strand. Such rapid propagation of an ignition reaction and subsequent ignition of the ~~fuel component~~ kindling bodies may provide a nearly instantaneous line of fire along the path of the subject incendiary device. The term "rapid", as used herein and in the claims, describes an accelerated rate of ignition propagation axially along the body of the ignition strand, relative to the intrinsic rate at which free-burning combustion of assembled strand materials propagates along the strand, upon ignition from an external heat source.

[0040] A solid or semi-solid fuel ~~component~~ composition comprises a major proportion, by weight, of the kindling body or bodies of the present incendiary strand. The fuel ~~component~~ composition is selected from known combustible substances, or mixtures of substances, that

undergo self-sustained combustion in a manner in which flames are produced of suitable length and intensity to cause the ignition of nearby vegetative fuels. Further, the amount of fuel ~~component~~ composition, as distributed along the length of the strand, must be sufficient to sustain burning at any point along the strand for a period of time sufficient to raise the temperature of nearby vegetative matter to the point of ignition. Some dead woody fuels may possess a relatively high degree of bound cellular moisture, requiring a certain intensity and duration of incident heat energy before the water is driven off to a point where burning of the vegetative matter can ensue in a self-sustained process. The incendiary strand of the present invention ~~is provided with a fuel component~~ includes one or more kindling bodies that exhibit[[s]] flaming combustion for a duration of from ten seconds to five minutes in time, as measured at any point along the length of the strand.

[0047] Referring now to FIG. 1 and FIG. 2, a specific embodiment of the present invention is shown as having the physical form of an elongate cord-like structure of indeterminate length. FIG. 1 illustrates a fragmentary isometric view of a linear incendiary strand; FIG. 2 shows a cross-sectional view of the same strand taken along line 2-2 of FIG. 1. The incendiary strand 10a has a tubular ~~body~~ shape formed by a single kindling body 11; the outside diameter of such strand is preferably about 3/4 inch (1.9 cm). The central longitudinal duct of strand 10a forms a gas channel 13, having an inside diameter of about 1/4 inch (0.64 cm). Pyrotechnic element 17, comprised of fabric substrate 12 with a coating of pyrotechnic composition 16, is disposed centrally within gas channel 13, with its lateral edges fixedly embedded in ~~fuel composition~~ kindling body 11 along the longitudinal axis of strand 10a. A plurality of vent passages 14 are

radially disposed about the circumference of strand 10a to form a grouping; such vent passage groupings are arranged at equidistant intervals along the strand. Outer waterproofing layer 15 covers the exterior surface of strand 10a, including the outer opening of the vent passages 14.

[0050] The fuel composition forming kindling body 11 is comprised of a combustible thermoplastic resin in homogenous admixture with cellulose fiber particles that have been impregnated with an oxidizing agent. The thermoplastic resin is preferably a mixture of a pine resin derivative (80% by weight), cellulose acetate butyrate (15% by weight), and a plasticizing agent (5% by weight). A suitable pine resin derivative that is commercially available is VINSOL resin, manufactured by Hercules Inc., which is produced from the steam distillation of pinewood stumps. A suitable plasticizing agent is selected from the group of plasticizers that are compatible with cellulosic and rosin-based products, and provides the incendiary strand with adequate flexibility. A preferred, vegetable-based plasticizer is glyceryl triacetate, available commercially as TRIACETIN, from Eastman Chemical Company. Other suitable plasticizers include triethyl citrate (CITROFLEX 2, from Morflex, Inc.) and butyl ricinoleate (FLEXRICIN P-3, from CasChem, Inc.). The ingredients are mixed together at a temperature of about 200 degrees C. to form a homogenous thermoplastic composition.

[0053] The fuel composition of kindling body 11 is formed into the shape of a hollow tube, having embedded within a portion of its interior walls the pyrotechnic element, using a cross-head extrusion technique. This extrusion process is similar to that used in the plastics industry to form thermoplastic layers over elongate strands, such as in the application of plastic insulation to

electrical wires. The incendiary strand 10a is formed by feeding pyrotechnic element 17 through a slotted aperture centrally disposed within a specifically designed extrusion head, while the fuel composition ~~11~~ is forced under pressure through the head. In this manner, a continuous strand is formed, and the strand is then cooled to solidify the thermoplastic composition. The extrusion apparatus may be a single or double screw extruder, and it is set up in a manner in which external heat is provided to melt the thermoplastic material instead of using adiabatic heating through high pressure compression.

[0055] The incendiary strand 10a is ignited by the application of flame to pyrotechnic element 17. The ignition reaction consumes pyrotechnic composition 16 at a relatively slow linear rate initially, discharging a high proportion of gaseous products of combustion away from the strand. As hot gasses are forced into gas channel 13, the ignition reaction accelerates to a high velocity of propagation along the surface of pyrotechnic element 17 due to the projection of heat forward along the gas channel 13. The ignition reaction further initiates combustion of ~~fuel composition~~ kindling body 11 along the internal surface of gas channel 13, which burns readily due to the incorporation of the oxygen-providing agent in the fibrous filler. The heat of combustion produces elevated internal strand pressure sufficient to burst outer waterproofing layer 15 at the outer terminus of the vent passages 14, allowing flames and sparks to emit therefrom. As the strand burns internally, the heat generated softens and melts ~~fuel composition~~ kindling body 11, most noticeably in the area of the vent passages 14. The strand's structural integrity fails first at these locations, causing the strand to separate into individually burning pieces, which may then fall to the ground if they happen to be elevated. The strand, or the pieces of the strand,

continue(s) to burn after transitioning into an amorphous melt, for a period of up to five minutes and with flame lengths of about 4 inches (10.2 cm).

[0056] In an alternative embodiment, the incendiary device of the present invention is shown in FIG. 3 and FIG. 4 as having the physical form of a wide tape, or ribbon, of indeterminate length. FIG. 3 illustrates a fragmentary isometric view of a linear incendiary strand 10b of such structure, herein referred to as an incendiary tape; FIG. 4 shows a cross-sectional view of the same strand, taken along line 4-4 of FIG. 3. The incendiary tape 10b is produced as a lamination of multiple layers, comprising upper covering layer 22, lower covering layer 21, ~~fuel composition~~ kindling bodies 24 and pyrotechnic element 23. ~~Fuel composition 24 is~~ Kindling bodies 24 are present in a discontinuous pattern on both upper and lower surfaces of pyrotechnic element 23, forming central longitudinal gas channel 26 in connective arrangement with multiple lateral gas channels 25. Lateral gas channels 25 are open to the exterior lateral edges of tape 10b, and are longitudinally offset to either side of longitudinal gas channel 26.

[0058] ~~Fuel composition 24~~ The fuel composition of kindling bodies 24 is produced using the same combustible resin composition as described for the fuel composition [[11]] of the previous example; however, the cellulose fiber filler material is excluded from the present example.

[0059] Upper covering layer 22 and lower covering layer 21 provide a water barrier and protective covering for ~~fuel composition~~ kindling bodies 24 and pyrotechnic element 23. In addition, the inner surfaces of covering layers 22 and 21 provide envelopment for channeling hot

gasses produced by combustion of pyrotechnic element 23, specifically along longitudinal gas channel 26 and lateral gas channels 25. The material selected for upper and lower covering layers 22, 21 may be polymeric film, coated fabric, or paper. A preferred material is 30 lb. creped kraft paper, which provides suitable flexibility for winding the incendiary tape 10b radially about a spool core. Creping allows the outer surface to stretch slightly, and the inner surface to compress slightly without damaging the functional integrity of the covering.

[0061] The separate layers of incendiary tape 10b are combined together to form a permanent lamination in a process typically utilized in the tape converting trade. Spools of upper covering layer 22 and lower covering layer 21 are mounted on separate feed spindles of a roll laminating apparatus. A spool of pyrotechnic element 23 is similarly mounted on a feed spindle between the spools of upper and lower covering layers. Pyrotechnic element 23 is drawn through a double-sided slot-die extrusion apparatus comprising two separate slot die extrusion heads on each side of the pyrotechnic element. The individual extrusion heads are provided with electrical or pneumatically operated shut-off valves, and the heads are arranged to apply two separated strips of the heated thermoplastic fuel composition [[24]] to each side of pyrotechnic element 23[[.]]. forming kindling bodies 24. Coating thickness is about 20 mils (0.020 inch) per side. The flow from each extrusion head is modulated by linear indexing means to provide discontinuous strips longitudinally. The resultant areas of pyrotechnic element 23, devoid of fuel composition [[24]] on both sides, form lateral gas channels 25.

[0062] Upper and lower covering layers 21, 22 are drawn together with the coated pyrotechnic element 23 and fed through suitably spaced pressure rollers to form a permanent lamination having a total thickness of about 0.060 inch (60 mils). ~~Fuel composition 24~~ The fuel composition forming kindling bodies 24 has superior adhesive qualities and is similar in form to commercially available hot melt glues. As such, the thermoplastic fuel composition [[24]] is heated and driven under pressure to the heated extrusion heads in a similar fashion as other hot melt coatings.

[0063] In operation, incendiary tape 10b is ignited by direct flame contact with pyrotechnic element 23, the combustion of which is similar to that described in the previous example. The ignition reaction propagates rapidly along longitudinal gas channel 26, and subsequently along each lateral gas channel 25, which results in a discharge of flames and sparks from points along the edges of the tape. In a very short time after ignition, the heat generated by the combustion of pyrotechnic composition 16 is sufficient to burn through upper and lower covering layers 21, 22, as well as fabric substrate 12, causing the tape 10b to separate into individually burning pieces. Although pyrotechnic composition 16 is present throughout the entire pyrotechnic element 23, it does not burn rapidly where it is sandwiched between ~~layers of fuel composition~~ kindling bodies 24.